Russian Journal of Physical Chemistry A 1999 vol.73 N2, pages 229-234

On the possibility of studying track membranes by the method of NMR with pulsed magnetic field gradient

Vasina E., Skirda V., Volkov V., Nechaev A., Mchedlishvili B.
Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

Translational diffusion of water molecules in the water-poly(ethylene terephthalate) track membrane system was studied by the method of nuclear magnetic resonance with pulsed magnetic field gradient at various orientations of the magnetic field vector relative to the surface of the membrane. In the long diffusion time mode, the effect of "diffusion diffraction" was experimentally observed. The dependence of the form of diffusion damping on diffusion duration at intermediate diffusion times was interpreted in terms of molecular exchange between water in pore channels and water in membrane gaps. The corresponding mean lifetimes were estimated. The potential of the method as a tool for determining the geometric characteristics of pores is discussed.